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EEI BULLETIN

• FEBRUARY, 1961 •

Record Attendance Expected at EEI Convention

The Real Value of the Crusade for Freedom

Edwin Vennard

Sales Conference to Set Sights on Future of Industry

Report on Resuscitation Awards

PUBLISHED BY EDISON ELECTRIC INSTITUTE

ELECTRIC UTILITY INDUSTRY Statistics IN THE UNITED STATES

for OCTOBER 1960

Current Statistical Data Covering 100 Percent of Industry

(Includes Investor-Owned Companies, Cooperatives, and Government-Owned Utilities) — October, 1960

	1960	1959	%
SOURCE AND DISPOSAL OF ENERGY			
NET GENERATION* (Kwhr in Thousands)			
By Fuel Burning Plants	51,758,913	47,471,780	+ 9.0
By Water Power Plants	10,493,127	11,632,210	— 9.8
Total Generation	**62,252,040**	**59,103,990**	**+ 5.3**
Add—Net Imports over International Boundaries	318,167	231,491	+ 37.4
Less—Company Use	166,762	160,731	+ 3.8
Less—Energy Used by Producer	1,799,453	1,412,754	+ 26.0
Net Energy for Distribution	**60,623,992**	**57,761,996**	**+ 5.0**
Lost and Unaccounted for	5,457,812	5,658,223	— 3.5
Sales to Utimate Customers	**55,166,180**	**52,103,773**	**+ 5.9**
CLASSIFICATION OF SALES			
NUMBER OF CUSTOMERS—As of October 31			
Residential or Domestic	49,860,580	48,742,373	+ 2.3
Rural (Distinct Rural Rates)	1,576,741	1,663,998	— 5.2
Commercial or Industrial:			
Small Light and Power	6,418,027	6,353,304**	+ 1.0
Large Light and Power	350,735	347,174**	+ 1.0
Other Customers	201,197	194,175	+ 3.6
Total Ultimate Customers	**58,047,280**	**57,301,024**	**+ 1.9**
KILOWATT-HOUR SALES—DURING Month of October (Kwhr in Thousands)			
Residential or Domestic	14,794,547	13,916,430	+ 6.3
Rural (Distinct Rural Rates)	1,016,572	977,911	+ 4.0
Commercial or Industrial:			
Small Light and Power	9,832,586	9,315,109**	+ 5.6
Large Light and Power	27,107,606	25,731,417**	+ 5.3
Street and Highway Lighting	562,007	524,052	+ 7.2
Other Public Authorities	1,414,526	1,207,996	+ 17.1
Railroads and Railways	379,768	379,759	+ 0.0
Interdepartmental	58,568	51,099	+ 14.6
Total to Ultimate Customers	**55,166,180**	**52,103,773**	**+ 5.9**
Revenue from Ultimate Customers (Thousands)	**$942,011**	**$891,131**	**+ 5.7**
RESIDENTIAL OR DOMESTIC SERVICE			
AVERAGE CUSTOMER DATA—for 12 months ended October 31, 1960			
Kilowatt-hours per Customer	3,767	3,540	+ 6.4
Average Annual Bill	$93.04	$88.85	+ 4.7
Revenue per Kilowatt-hour	2.47¢	2.51¢	— 1.6

* By courtesy of the Federal Power Commission.
** Revised for comparison purposes.

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EEI BULLETIN

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The EDISON ELECTRIC INSTITUTE BULLETIN is published monthly, except bi-monthly in July and August, by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of investor-owned electric utilities in North, Central and South America and contiguous islands in the Western Hemisphere.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

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CONVENTIONS and MEETINGS

1961

March

5- 9 ASME Gas Turbine Power Division Conference, Shoreham Hotel, Washington, D. C.

13-15 EEI Meter and Service Committee, Netherland Hilton Hotel, Cincinnati, Ohio

16-17 EEI Accounting Division Executive Committee, Shoreham Hotel, Washington, D. C.

16-17 EEI Industrial Relations Committee, Mayflower Hotel, Washington, D. C.

20-22 EEI Sales Conference, Edgewater Beach Hotel, Chicago, Ill.

21-23 American Power Conference, Sherman Hotel, Chicago, Ill.

27-29 Southeastern Electric Exchange Annual Conference, Boca Raton Hotel & Club, Boca Raton, Fla.

April

6- 7 EEI Electric Power Survey Committee, EEI Headquarters, New York City, N. Y.

6- 7 PCEA Engineering and Operating Section, Ambassador Hotel, Los Angeles, Calif.

9-13 ASME Oil and Gas Power Conference and Exhibit, Jung Hotel, New Orleans, La.

10-12 EEI Insurance Committee, Cavalier Hotel, Virginia Beach, Va.

12-14 Missouri Valley Electric Association Engineering Conference, President Hotel and Municipal Auditorium, Kansas City, Mo.

17-18 PCEA Business Development Section, Sheraton-Palace Hotel, San Francisco, Calif.

17-19 EEI-AGA National Conference of Electric and Gas Utility Accountants, The Chase Park Plaza Hotel, St. Louis, Mo.

20-21 EEI Industrial Relations Committee, Roosevelt Hotel, New Orleans, La.

24-26 EEI Accident Prevention Committee, Edgewater Beach Hotel, Chicago, Ill.

26-27 Indiana Electric Association, 21st Annual Young Men's Utility Conference, Severin Hotel, Indianapolis, Ind.

26-28 NELPA Engineering & Operation Section Joint Meeting with Personnel and Safety Section, Sheraton-Portland Hotel, Portland, Ore.

27-28 PCEA Administrative Services Section, Villa Hotel, San Mateo, Calif.

May

8-10 EEI Prime Movers Committee, Milwaukee, Wis.

8-12 EEI Transportation Committee, Sheraton Hotel, Philadelphia, Pa.

10-12 EEI Statistical Committee Joint Meeting with New England Council, Schine Inn, Chicopee, Mass.

15-17 EEI Purchasing & Stores Annual Meeting, The Shamrock Hilton, Houston, Texas

17-19 PCEA Annual Convention, Sheraton Palace Hotel, San Francisco, Calif.

17-20 EEI Hydraulic Power Committee, Spokane, Wash.

18-19 EEI Transmission and Distribution Committee, Netherland Hilton Hotel, Cincinnati, Ohio

24-26 NELPA Accounting and Business Practice Section, Medford Hotel, Medford, Ore.

June

5- 7 EEI Annual Convention, Waldorf Astoria, New York City, N. Y.

25-30 ASTM Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

26-28 American Society of Heating, Refrigerating and Air Conditioning Engineers Annual Meeting, Denver, Colo.

September

11-12 EEI-AGA Accounting Division & Section Organization Meetings, Netherland Hilton Hotel, Cincinnati, Ohio

14-16 Public Utilities Association of the Virginias, White Sulphur Springs, W. Va.

20-22 IIFEUC Eighth Annual National Electric Farm Power Conference, Leamington Hotel, Minneapolis, Minn.

October

2- 4 EEI Prime Movers Committee, Denver, Colo.

4- 6 Indiana Electric Association, 52nd Annual Convention, Sheraton Hotel, French Lick, Ind.

15-20 AIEE Fall General Meeting, Detroit, Mich.

18-20 Wisconsin Utilities Association Fall Convention, Schroeder Hotel, Milwaukee, Wis.

26-27 PCEA Hawaiian Conference, Princess Kaiulaui Hotel, Honolulu, Hawaii

Record Attendance Expected at 29th Annual Convention of EEI

H. J. CADWELL
Chairman, EEI Convention Program Committee

C. E. EBLE

O. T. FITZWATER

N. R. SUTHERLAND

T. H. WHARTON

E. H. WILL

A RECORD-BREAKING attendance is expected at the Institute's 29th Annual Convention June 5-7—the first EEI annual meeting to be held in New York since 1946.

Institute President Sherman R. Knapp has announced the Convention's forward-looking theme, "Targets for Tomorrow in Electric Power," and the EEI Convention Program Committee, under the Chairmanship of H. J. Cadwell, President of Western Massachusetts Electric Co., is preparing a program of great value, with excellent speakers from within and outside the industry.

Serving on the Program Committee with Mr. Cadwell are C. E. Eble, President of Consolidated Edison Co. of New York, Inc.; O. T. Fitzwater, President of Indianapolis Power & Light Co.; N. R. Sutherland, President of Pacific Gas and Electric Co.; T. H. Wharton, President of

Houston Lighting & Power Co.; and E. H. Will, Chairman of the Board, Virginia Electric & Power Co.

The program being arranged by the committee will present the challenges and opportunities facing the electric industry in the future, as the investor-owned companies set themselves to the task of assuring the continuance of the United States' world pre-eminence in the production and use of electric energy.

The first Convention session will be held on Monday afternoon, June 5, and will be followed by morning and afternoon sessions on both Tuesday and Wednesday, June 6 and 7. All business sessions will be held at the Waldorf-Astoria Hotel. The Convention will conclude on Wednesday evening, June 7.

A highlight of the Convention will be the third annual presentation of The Edison Award to an electric company "for distinguished contribution to the development of the electric light and power industry, for the convenience of the public, and the benefit of all."

Special Events Planned

In addition to the formal business sessions, several special events are being planned, including the President's Reception, and a Ladies' Luncheon.

Eight hotels besides the Waldorf-Astoria — each within walking distance of the Convention headquarters hotel — will be available for those attending the Convention. They include: Barclay, Lexington Ave. and 48th St.; Belmont Plaza, Lexington Ave. and 49th St.; Biltmore, Madison Ave. and 43rd St.; Commodore, Lexington Ave. and 42nd St.; New Weston, Madison Ave. and 50th St.; Park Lane, 299 Park Ave.; Roosevelt, Madison Ave. and 45th St.; Sheraton-East, Park Ave. and 51st St. The Waldorf-Astoria is located at Park Ave. and 50th St.

Hotel Reservation Blanks from EEI

Application blanks for hotel reservations may be obtained from Edison Electric Institute, 750 Third Ave., New York 17, N. Y. However, all applications for reservations of rooms should be made directly to the EEI Convention Housing Bureau, c/o New York Convention and Visitors Bureau, Inc., Pershing Square, 90 East 42nd St., New York 17, N. Y.

The confirmation of hotel reservations will be made by the individual hotels, and not by the Housing Bureau. It is important that delegates, when making application for reservations at hotels, list four hotel choices.

To accommodate those arriving in New York on the weekend preceding the Convention, registration facilities will be set up in the Waldorf-Astoria on Sunday afternoon, June 4. The registration fee of $15 covers admission to all business sessions and social functions of the Convention. Identification for admission to these events will be badges for gentlemen and pins for ladies, both obtainable only upon registration.

New York at night presents a dazzling array of lights and reflections in this scene, looking west from the East River. Easily recognizable are the United Nations Building, left; the Empire State Building (with beacon); and the Chrysler Building, the tall building to the left of the picture's c nter. Most of the hotels which will house EEI Convention delegates, June 5-7, are located within the area shown, on New York's East Side. This will be the Institute's first meeting in New York since 1946. EEI held its first meeting in New York in 1939.

Four Companies Nominated for Third Edison Award

FOUR investor-owned electric utility companies have been nominated for The Edison Award, the industry's highest honor, which will be presented during the 29th Annual EEI Convention in New York City, June 5-7, at the Waldorf-Astoria Hotel.

Replaced Coffin Award

This will be the third annual presentation of The Edison Award, which has replaced the Coffin Award as the industry's top award which can be won by an electric utility company. The Edison Award is presented by the Institute to an electric company "for distinguished contribution to the development of the electric light and power industry, for the convenience of the public, and the benefit of all."

The Award consists of a gold medal for the winning company, and $1000 for the company's employees' fund. The Award has acquired national prominence in the public mind, as well as in the electric industry, for its significance in recognizing conscientious service and progressive development. The Award is made for accomplishment during the preceding year.

Finalists Listed

These companies have been selected as finalists by the Review Committe for The Edison Award. They will receive citations and will be invited to submit presentations for the final award. The four companies are:

American Electric Power Co.
Georgia Power Co.
Pennsylvania Electric Co.
Southern California Edison Co.

The Review Committee's reasons for selecting these four companies follow:

American Electric Power Co.—For significantly advancing steam-electric plant progress with 475-mw Breed No. 1 and its sister unit, Philip Sporn No. 5, the largest operated by investor-owned utilities, and the world's most efficient, Breed testing at 8376 Btu per net kwhr, together with Breed's associated 186-mile, double-circuit, 345-kv transmission, the nation's longest EHV lines; for pioneering development of "bare hands" high-voltage, live-line maintenance techniques; and for outstanding promotion of residential electric space heating, which added 6000 completely electric homes to its lines.

Georgia Power Co.—For initiating new concepts in service-entrance policies wherein, by capitalizing facilities from the weatherhead through the service-entrance panel, the company has broken the bottleneck of wiring costs to the customer, thereby widely expanding the potential use of major appliances, particularly in the older homes, apartments, and rental properties; and for a vigorous follow-up, resulting in thousands of installations to date.

Pennsylvania Electric Co.—For pioneering the design and construction of America's first 460-kv transmission line operating as a major component of an integrated power system network — all accomplished within a period of approximately one year — and conceived as a practical prototype from which to obtain reliable cost data and practical operating experience for the benefit of the entire electric utility industry.

Southern California Edison Co.—For its leadership in the development and promulgation of advanced management policies that have resulted in close integration of the management team, and in expediting decisions on specific problems at all levels of supervision; and for an outstanding load development program that has resulted in achieving national leadership in the installation of Medallion homes.

The Real Value of the Crusade for Freedom

By Edwin Vennard
Vice President and Managing Director, Edison Electric Institute

POSSIBLY the subject most discussed in America today is the Russian threat. It is being discussed because Americans are seeking to evaluate it in order to learn how to deal with it. People seek the answers to many questions, such as, "Are the Russians going to out-produce us?", "Are they going to pass us?", "What is the Russian system—is it communism, as we have been taught in schools?"

Two Visits to Soviet Union

Representatives of the American electrical industry made two visits, in 1958 and 1959, to the Soviet Union to inspect Russian electric power facilities and plants manufacturing electrical equipment. I was privileged to have made both trips. The tours were made under the auspices of the Edison Electric Institute and the Association of Edison Illuminating Companies, trade associations of investor-owned utilities, as part of a technical and cultural exchange program, sponsored by the U S. Department of State and its Russian counterpart. We traveled some 17,000 miles as the guests of the Russian government. I had a chance to see many things, and I had my eyes opened in many respects.

We found the Russians to be good engineers and good scientists. Friendly, hospitable people, they were eager to tell us all about their affairs. They are enthusiastic about their system, but unusually eager to learn about ours.

First of all, we found that Russia does not practice communism as described by Marx, who said that each man should work according to his ability, and receive according to his needs. In Russia the wages and salaries vary much as they do in America, except that Russian wages are only about one-third of American wages in purchasing power.

The Russian System

The Russian system is simply a complete government-owned and government-planned economy. Government owns and operates all production machinery, decides what shall be made, and the prices people shall pay. All people work for the government. They are subservient to the government, therefore they are not free—free from government domination. They get only such information as the government chooses to give them.

Presented in the W stern States on behalf of Radio Free Europe.

It is the oldest system on earth. Since the dawn of history man has been trying to free himself from government-planned economies. He did so here in America, to a greater extent than man had ever done before, and because of our freedom from government subservience and domination, we have built here the greatest civilization on earth—greater than all of man's previous dreams.

Let me give you my appraisal of the Russian production capacity from the standpoint of the electric energy being used. As you know, most things in Russia and in America are made or produced by machinery. America has much more machinery, but both Russia and America use energy for the same purpose.

We now have in this country some 193 million kilowatts of capability in electric generating capacity, compared to 65 million in Russia. We installed last year more than twice the new electric power generating capacity installed in Russia. In the period, 1958-1962, we will have installed in America more new capacity than the present total of all Russia's power facilities, old and new.

Russia Never Reached Goal

We know their goal for 1970. Let us assume that they reach this goal. They have never done so in the past, but let us assume they do. In 1970, we will have 326 million kilowatts, while they will have 190 million kw. Our lead over them in 1970 will be greater than it was in 1960. With reasonable assurance, I can state that in electric power, they are not going to pass us in the foreseeable future.

Total energy use and energy used per person to an economist are the best measures of the productive output of a nation, because most industry is run by electric power. Russia has 214 million people, compared to our 180 million. In 1959 the Russian people used 1183 kwhr per capita. We used 4490 kwhr, nearly four times as much. In 1970 Russia expects per capita use to be about 3000 kwhr per year, while ours will be around 7500. Instead of their catching up, the gap will be further widened.

Our Output Lead

From this appraisal of energy use, it appears that America's total production output is some two and one half times that of Russia's. Power capacity is installed in advance to meet anticipated needs. We have here about 25 percent reserve capacity. In America, energy use and capacity double about every 10 years. Plans already have been made to meet the demands in 1970 and 1980. We saw no indication that Russia would reach us in total production capacity in the foreseeable future.

Obviously, a country of lower total production can concentrate on certain items and excel. This Russia has done, and we must be alert as to what she produces.

It is estimated that Russia devotes some 30 percent of its Gross National Product to war materials. We are matching her for defense purposes, but this takes only about 9 percent of our larger Gross National Product. In World War II, when we were "all-out" in war production, we were then devoting some 35 percent of our Gross National Product to war production. This is considered about the top for a modern economy. People have to eat and live.

Let us not become complacent. But, at the same time, let us not over-estimate what a government-planned economy can produce. Let us not be taken in by Russian propaganda.

Communications

I found myself in Russia, uninformed about Russian affairs, but I also found the Russians incredibly uninformed about the affairs and conditions in the West. I had the same experience in Poland, but here we were dealing with Western people. They are held captive by the Russians, but they are eager to know what is going on outside. I learned that the information sent to Poland by Radio Free Europe gets through and the people in Poland like it. Also I learned that the Russian government dislikes Radio Free Europe intensely—and spends 10 times as much trying to jam our broadcasts and keep the truth from their people as we spend in its operation.

Let me tell you a bit about it.

Radio Free Europe is the organization broadcasting facts and information to Poland, Czechoslovakia, Hungary, Romania, and Bulgaria, behind the Iron Curtain. Without such broadcasts these Communist-controlled countries would receive only such distorted information as the Kremlin chooses to give them. The work of Radio Free Europe is supported through the Crusade for Freedom, its fund-raising arm.

Interest in Radio Free Europe

I became interested in this work because of my visits in the Soviet Union. Also, I have visited Poland, and have seen the Radio Free Europe in operation at Munich, Germany, and Lisbon, Portugal. Let me give you my first-hand experience and tell you why this is something which is of importance to you.

I had the privilege, with 60 other Americans, of visiting the facilities of Radio Free Europe, and learning of its work. Today, there are 28 powerful RFE transmitters located in West Germany and Portugal. These transmitters are on the air almost 3000 program hours every week. The programs broadcast by Radio Free Europe cover a range of subjects comparable to any American radio station. RFE is on the air 18 hours every day to Czechoslovakia, Poland, and Hungary, and about six hours a day to Bulgaria and Romania.

Ten minutes of last-minute news, every hour on the hour, is the backbone of RFE's programming schedule.

In addition to news of America, other free world nations, and major international events, RFE reports the facts about events within the listeners' home countries, and in Soviet Russia—facts that the Communists try to suppress or distort.

Well-Rounded Programs

Daily commentaries which follow the news programs help listeners understand events and trends within their own countries in relation to developments elsewhere. There are also special programs for the youth, workers, intellectuals, women, children, and other special groups. Religious programs are broadcast to listeners of all faiths. Cultural programs, music, drama, sports, entertainment, reviews of the Western press, and on-the-spot coverage of major events throughout the world round out a program schedule designed to attract and hold the largest possible audience.

At no time do RFE programs recommend action, exhort or indulge in denunciations of wrongs which are already apparent to listeners suffering under Communist rule. The programs inform, clarify and focus attention on facts that people should know in order to calculate their actions wisely.

Radio Free Europe's headquarters are located in New York, where some 15 percent of all programs are produced. The other 85 percent of the programs are produced at RFE's European studios in Munich, West Germany. A modern teletype service enables the New York and Munich offices to maintain instantaneous two-way communications. More than seven thousand news stories regarding American affairs are teletyped annually from the New York news room to Munich, in order to keep listeners behind the Iron Curtain abreast of the American scene. A central news room in Munich serves as a compiler, a clearing house, and disseminator of news and information for RFE broadcasts. It operates round the clock so that the people of East Europe can be kept fully informed of all significant developments in every area of the world—including their own countries. The news bureaus located in the major European capitals are staffed by experienced news men, reporters, and interviewers. The central news room in Munich compiles a total of some 350,000 words of news and information every day.

A vital part of RFE's news and information service is a vast monitoring service, which tunes into more than 50 Communist radio stations and teletype services in the satellite countries, Soviet Russia, and Red China. Hundreds of Communist newspapers and other publications are also read by RFE experts.

93 Percent Heard Radio Free Europe

Recently a large-scale audience survey of listenership to Western broadcasts was completed, based on interviews with 760 refugees from Czechoslovakia, Hungary, and Poland, who were selected as being most representative of the over-all population. Nearly all of those interviewed had listened to Western broadcasts, and 93 percent had listened to Radio Free Europe. Over three-fourths of those interviewed had listened to Radio Free Europe more than twice a week.

Further evidence regarding RFE's effectiveness is seen in Communist actions, which are manifested in several ways.

For example, RFE programs are jammed by some 2500 Communist jamming transmitters. Most of them are located within Soviet Russia. This vast jamming operation indicates how deeply the Russian regime dislikes the effects of the RFE program. Nevertheless, more than 90 percent of RFE programs get through on at least one frequency in most areas.

Soviet Union, Satellites Attack RFE

The Soviet Union, the satellite countries, and the Communist press in the free world wage a ceaseless propaganda campaign against RFE in an effort to discredit it. Since 1954, newspapers and radio stations in the satellite countries alone have attacked RFE over 7000 times. This figure does not include attacks in Soviet media, such as *Pravda*, *Izvestia*, Tass, and Radio Moscow.

Our experience with Radio Free Europe has been a most heartening one. We have found an effective means of carrying out one of the main objectives of our effort in the Cold War—communicating the facts. Radio Free Europe has helped break the Kremlin monopoly on information inside the Iron Curtain.

The basic issue in this Cold War is the question of which system—the Government-Planned Economy, or the Free Economy—is the better. Each system, of course, claims superiority. Ours, we feel, can stand up to any comparison. On the other hand, the Russian leaders are sensitive about letting the truth in for fear that their subjects will decide against them.

Our System Believed Superior

In conclusion, I believe that our system—the Free Economy — is superior to the Government-Planned Economy of Russia. It is superior in religious values, in human values, and in material values. It is out-producing the Russian system in the things people want and need for their sustenance, well-being, and advancement.

The Cold War today is really a battle of ideas and ideals. It is a battle of the mind. Our weapons are those of communications — communications here at home, communications abroad. How well we use communications may determine whether we win or lose.

Radio Free Europe, serving 80 million friends and allies in the captive countries behind the Iron Curtain, is playing an important part in this battle. It warrants your support.

New Safety Award Established

Frequency Rate Safety Award Will Be Presented Annually to Six EEI Member Companies

By A. J. Naquin

Chairman, EEI Accident Prevention Committee

THE establishment of a new safety award, the Frequency Rate Safety Award, has been approved by the EEI Awards Committee, at the suggestion of the Accident Prevention Committee.

Six Classifications

The new award, which will consist of a plaque, will be presented annually to each company within six classifications maintaining the lowest disabling injury frequency rate.

No applications will be required for the new award. The handsome bronze plaques will be automatically forwarded to the chief executives of the six qualifying companies. The determination of the qualifying companies will be based on data supplied in the EEI Annual Work Injury Statistical Report forms, provided such data have been forwarded to EEI headquarters not later than March 15 of the year following that for which the award will apply.

One of the basic tools used in accident prevention work is that of recognizing and congratulating those responsible for a job well done. This new award, like the other two EEI Safety Awards, places emphasis on team accomplishment. It will aid in building and sustaining employee morale. If the new awards are given appropriate local and industry-wide publicity they will help to focus even more attention on the importance of electric utility employees working safely, everywhere, all the time.

Rules of the Award

The complete rules and regulations governing the award are as follows:

Purpose: Edison Electric Institute Frequency Rate Safety Awards shall be made annually to a member company of the Edison Electric Institute which shall have completed all electric operations in a calendar year with the lowest frequency rate of disabling work injuries in accordance with American Standards Association Standard Z16.1 for each company classification specified in the following paragraph.

The Award: An award bearing the citation and the signatures of the President of the Edison Electric Institute and the Chairman of the Accident Prevention Committee shall be made annually to member companies whose entire personnel engaged in electric operations shall have completed a calendar year with the lowest frequency rate of disabling work injuries in each of the following company classifications:

99	or less		employees
100	to	499	employees
500	to	999	employees
1,000	to	1,999	employees
2,000	to	4,999	employees
5,000	or more		employees

Eligibility: Member companies of the Edison Electric Institute which qualify are eligible for the award.

Selection for Award: Determination of the member companies qualifying for awards in the respective classifications shall be made from data reported to the Edison Electric Institute headquarters on the Annual Work Injury Statistical Report form.

Issued Automatically

No applications for awards will be necessary, as they will be issued automatically following review of the annual data. However, in order to qualify for an award, the Annual Work Injury Statistical Report form must be submitted by March 15 of the year following that for which the award will apply.

In the event of a tie, the member company with the greatest number of man-hours of exposure shall receive the award for the company classification involved.

Presentation of Awards: The award will be forwarded to the chief executives of qualifying companies.

Reproduction of Awards: A member company wishing to reproduce the award received by it, may do so by any process whatsoever without further permission.

59 Safety Achievement Awards Are Presented

FIFTY-NINE Safety Achievement Award certificates have been presented by EEI to member company departments for achieving 1 million or more man-hours of operation without a major accident.

These awards were made between July 1, 1960, and Dec. 31, 1960.

3 Million Safe Man-Hours

During this period, two companies received certificates for achieving 3 million or more man-hours of operation without a disabling accident, and eight departments were cited for achieving 2 million or more man-hours of safe operation.

The Production Department, Marysville Power Plant of The Detroit Edison Co., and the Electric System of New Orleans Public Service Inc., received the 3 million man-hour awards.

Two million man-hour awards were presented to the following:

Electric Operating Departments of Baltimore Gas and Electric Co. (2); Electric Production Department, Miami Fort Station of The Cincinnati Gas & Electric Co.; Chicago Central Division of Commonwealth Edison Co.; Production Department, Hell Gate Station of Consolidated Edison Co. of New York, Inc.; Edge Moor Power Station of Delaware Power & Light Co.; Clarksburg Division of Monongahela Power Co.; Entire Company of The Potomac Edison Co.

The entire listing for July 1, 1960 to Dec. 31, 1960, is as follows:

Appalachian Electric Power Co.
- Philip Sporn Plant—Central Operating Co. 1,000,000

Baltimore Gas and Electric Co.
- Electric Operating Departments 2,066,260
- Power Production Stations 1,002,271
- Electric Operating Departments 1,020,565
- Electric Operating Departments 1,012,534
- Electric Operating Departments 2,083,848

Central Maine Power Co.
- Western Division 1,000,087

The Cincinnati Gas & Electric Co.
- The Union Light, Heat and Power Co., Electric Distribution Department 1,000,000
- Electric Production Department, Miami Fort Station 2,000,000
- Electric Production Department 1,000,000
- Electric Production Department, Walter C. Beckjord Station 1,000,000

The Cleveland Electric Illuminating Co.
- Electrical Operation Department 1,000,000

Commonwealth Edison Co.
- Chicago Central Division 2,000,000

Consolidated Edison Co. of New York, Inc.
- Outside Plant Construction Department, Underground Bureau 1,000,000
- Commercial Buildings Department—Planning & Equipment Bureau 1,000,000
- Production Department, Hell Gate Station 2,000,000

Delaware Power & Light Co.
- Edge Moor Power Station 2,000,000

The Detroit Edison Co.
- Production Department, Marysville Power Plant 3,001,838
- Overhead Lines Department 1,070,751
- Underground Lines Department, Conduit Division 1,013,753
- Group C — Substation Department 1,084,388

Electric Energy, Inc.
- Entire Company 1,039,179

Florida Power Corp.
- Production System Department 1,004,500

Georgia Power Co.
- Southeast Line Operating Headquarters . 1,000,243

Gulf States Utilities Co.
- Entire Company 1,000,000

Indiana & Michigan Electric Co.
- Marion-Muncie Division 1,000,459

Indianapolis Power & Light Co.
- H. T. Pritchard Generating Station, Power Production Department 1,405,199
- Entire Company 1,049,195

Kansas Gas and Electric Co.
- Entire Company 1,133,744

(Continued on page 64)

EEI Sales Conference to Set Sights on Future of Electric Industry

27th Annual Meeting to Be Held in Chicago, March 20-22; Program Is Announced

EXECUTIVES prominent in the electric utility and allied industries at the 27th Annual Sales Conference of the Institute in Chicago, March 20-22, will review the industry's recent sales picture, and make plans for meeting the challenges expected in the future.

Two General Sessions

General Sessions will be held on the mornings of Tuesday and Wednesday, March 21 and 22, in the Grand Ballroom of the Edgewater Beach Hotel. C. D. Lawrence, Vice President in Charge of Sales, New England Electric System, and Chairman of the EEI Sales Division Executive Committee, will preside at these sessions. At the first General Session, he will review the activities of the Sales Division Committees during the past year.

Sherman R. Knapp, EEI President and President of The Connecticut Light & Power Co., as the first guest speaker at this session, will report on the recent progress of the industry, emphasizing the sales area, and will comment on what is expected in the future.

The role of the utility in area development, and the impact of urban renewal will be discussed by R. H. Ryan, Executive Vice President of Perini Corp., in an address titled "Area Development and the Industrial Market."

W. M. Shepherd, Vice President in Charge of Sales, Arkansas Power & Light Co., and Chairman of the EEI Live Better Electrically Policy Committee, will present a preview of EEI's 1961 Live Better Electrically Program.

The following speakers will address the second General Session on the morning of March 22:

Dr. Pierre Rinfret, Director of the Economics Department, Lionel D. Edie & Co.; Edwin Vennard, Vice President and Managing Director, EEI; W. W. Sproul, Jr., Vice President, Westinghouse Electric Corp.; and G. W. Hipple, Eastern Sales Manager, Fedders Corp.

In his address, "Economics and Their Relationship to Our Industry," Mr. Rinfret, a well-known economist, will discuss the economic future of the electric utility industry.

Mr. Vennard has selected "Some Industry Problems and Their Relations to Sales" as the title of his speech. It will stress problems and areas of challenge which companies are expected to meet, and how their solutions will have a bearing on the continued industry growth and sales.

Mr. Sproul's address, "Total Electric Frontiers," is expected to describe the total electric concept as it applies to large commercial projects, as well as to the residential market.

Mr. Hipple's talk will be titled, "Sell Yourself Rich."

Four Groups to Meet

The four groups of the EEI Sales Division will meet in individual sessions on the afternoon of Tuesday, March 21.

The Commercial Group will meet in the South Terrace of the Edgewater Beach, starting at 2:15 p.m. L. T. Cale, Manager, Commercial Sales, Alabama Power Co., and Chairman of the EEI Commercial Group, will preside. Speakers and their subjects will be as follow:

Murray Joslin, Vice President in Charge of Sales, Commonwealth Edison Co., who will discuss "Missile with a Payload." Mr. Joslin feels that commercial cooking equipment offers an answer to expansion in the

food service industry, and provides utilities with desirable payloads.

Z. A. Marsh, Director of School Activities, Minneapolis-Honeywell Regulator Co., "The Future of Air Conditioning in Schools." A proponent of the utilization of temperature as a teaching aid, Mr. Marsh will discuss the importance of air conditioning in providing an environment for learning in our schools.

C. W. McCormick, Commercial Sales Manager, The Connecticut Light & Power Co., "Our 1961 Promotion on the Streamlighted Block." He will tell of the success his company has had with a program aimed at modernizing single business blocks.

L. E. Tayler, Director of Commercial Sales, The Detroit Edison Co. With a public education program as a preliminary phase, Detroit Edison launched a successful, high-level "Pacemaker" lighting activity. Mr. Tayler will report on the program and its results so far.

Ed Wimmer, Vice President, National Federation of Independent Business, "More Light—Less Blight." Mr. Wimmer plans to discuss some of the ways of securing the cooperation of "old neighborhood" businessmen in getting better street lighting, and its importance to their businesses.

The Farm Group will meet in the Michigan Room, starting at 2:15 p.m. L. T. Wansley, Manager, Rural Division, Georgia Power Co., and Chairman of the EEI Farm Development Committee, and Virgil Marvin, Manager, Rural Sales Department, The Toledo Edison Co., and Chairman of the EEI Farm Promotion Committee, will preside. Speakers and their subjects are as follow:

L. H. Hammond, Manager of Rural Development, Sales Division, New York State Electric & Gas Corp., and Chairman of the EEI Farm Group, will report on the Farm Better Electrically national advertising program (See story on page 48.)

V. L. Schreiber, Product Development Manager, New Holland Machine Co., will discuss the action manufacturers may take to help promote all-electric farming.

C. E. Snavely, Executive Vice President, Illinois Retail Farm Equipment Association, will present his association's view of the Farm Better Electrically program, telling how the dealers can cooperate more closely with the power suppliers.

E. E. Porter, Vice President and Business Manager, Home State Farm Publications, Inc., will tell how local media can cooperate with the investor-owned electric utility companies, and increase sales of electricity on the farms.

The Industrial Power and Heating Group will meet in the East Lounge, starting at 2:15 p.m. A. D. Spillman, Assistant Manager, Sales Application Department, Philadelphia Electric Co., and Chairman, EEI Industrial Power and Heating Group, will preside. Speakers and their subjects will be as follows:

C[illegible] Jernstedt, Manager of Manufacturing Planni[illegible]tinghouse, will tell the conference, "1965 Is H[illegible] new markets for industrial power, predicted for the coming decade are here now, Mr. Jernstedt says, made possible by the latest developments in the field of numerical controls.

Karl Rudolph, Vice President of Marketing, The Cleveland Electric Illuminating Co., "Measurement and the Industrial Sales Manager." Mr. Rudolph will answer the question: "How does a sales manager know he is getting maximum performance from the members of his sales staff?"

F. F. Dickmann, Manager of Industrial Sales, West Penn Power Co., and Chairman of the EEI Competitive Service Committee, and J. C. Zeiler, System Supervisor, Commercial and Industrial Sales, Indiana & Michigan Electric Co., "Two New Tools." Two new training courses provided by the Industrial Electrification Council to help obtain more mileage from sales campaigns will be discussed by the Messrs. Dickmann and Zeiler. Mr. Dickmann will discuss the Industrial Electric Power Distribution Course, and Mr. Zeiler the Electric Comfort Heating for Industry course.

F. H. Buzzard, President, Charles S. Leopold, Inc., "Building New Markets Together." Mr. Buzzard says 1961 will be a year of challenge in which creative selling will be the pay-off.

The Residential Group will meet in the Grand Ballroom, starting at 2:15 p.m. J. H. K. Shannahan, Assistant Commercial Vice President, American Electric Power Service Corp., and Chairman of the EEI Residential Group, will preside. Speakers and their subjects will be as follow:

Herbert Main, Potomac Electric Power Co., "Report on Residential Lighting Load Research." This report, prepared by the Residential Lighting Committee, gives a clear look at this important aspect of load building.

F. T. Sides, President, National Mineral Wool Association, "Electric Heating and Insulation." Mr. Sides will discuss electric heating and insulation, and articles in the trade press which have covered both sides of this question.

L. E. Pierron, Commercial Manager, Commonwealth Edison Co., "Marina City." Mr. Pierron will point out the important role that Commonwealth Edison played in the development of Marina City, with its huge Gold Medallion apartment project.

C. W. Mills, Manager, Market Development, Apparatus Marketing Division, Westinghouse, "Why Total Electric?" Mr. Mills will present a timely summation of the many reasons why it is necessary for investor-owned electric companies to promote and emphasize the total electric programs and activities.

Following the General Session on March 21, the EEI Sales Promotion Awards Luncheon will be held in the Polynesian Village of the Edgewater Beach. Awards will be made to member companies for outstanding sales promotion programs in the commercial, farm, industrial and residential markets.

The General Luncheon will be held in the Polynesian Village, following the General Session on March 22. Moorhead Wright of General Electric Co. will discuss "This Changing World."

Planning the investor-owned electric utility industry's participation in the 1964-65 New York World's Fair are, from left, Edwin Vennard, EEI Managing Director, and Vice President of Power & Light Exhibit, Inc., the corporation formed to conduct the industry's participation in the fair; E. R. Acker, President of P&LE, and Chairman of the Board, Central Hudson Gas and Electric Corp.; C. M. Vandenburg, President of VEK Associates, Inc., which will create the architectural concept, theme, exhibits plan, and programming for the P&LE project; and H. S. Sutton, Treasurer of P&LE and of EEI, and Treasurer, Consolidated Edison Co. of New York, Inc.

Watkins Named Director of EEI Research Division

APPOINTMENT of George E. Watkins as Director of the new Research Division at EEI has been announced by Edwin Vennard, Vice President and Managing Director.

Since joining EEI in 1951, Mr. Watkins has served in a number of capacities, including Secretary of the Research Projects Committee, the Prime Movers Committee, the Technical Appraisal Task Force on Nuclear Power, the Hydraulic Power Committee, and the System Planning Subcommittee of the Electrical System and Equipment Committee. As Director of Research, he will concentrate on the activities of the Institute's recently organized Research Division.

The new Research Division Executive Committee is headed by Willis Gale, Chairman of Commonwealth Edison Co., as Chairman. The Division will utilize the Institute's Research Projects Committee, formed nine years ago, which recently made recommendations leading to the establishment of the Research Division. In selecting and administering research projects, the Institute's expanded activity will involve projects suited to action by the industry as a whole.

During World War II, Mr. Watkins served as a commissioned officer in the U. S. Maritime Service. He was graduated from the University of Utah in 1947, and spent four years in engineering research at Worthington Corp., Harrison, N. J. He received his master's degree from Stevens Institute of Technology in 1950,

GEORGE E. WATKINS

and was awarded a Ph.D. from Columbia University in 1957. Besides holding membership in the Air Pollution Control Association and the American Society of Mechanical Engineers, he is a member of [illegible] Beta Pi and Theta Tau.

Protection of Three-Phase Motors Against Single-Phasing

By H. P. Seelye

Consultant, EEI Research Projects Committee

A RESEARCH project concerning failures of three-phase motors, with particular attention to those caused by "single-phasing," has recently been completed by the Underwriter's Laboratories, Inc.

This project was sponsored jointly by the Edison Electric Institute and the National Electrical Manufacturers Association for the purpose of obtaining information for the use of Panel 11 of the National Electrical Code Committee in its consideration of rules for the protection of three-phase motors. This paper will tell briefly what led up to this research study, and its results.

Single-Phasing

Any three-phase motor connected to a three-phase power supply is subject at times to the application of single-phase voltage if one of the phases of the supply curcuit is opened. Such an opening may be occasioned by a break in a wire, the blowing of a fuse, or the intentional disconnection of one phase of the primary, the secondary, or the customer's wiring through which the motor is supplied. These occurrences come about due to faults on the circuits or the clearing of one phase for maintenance or repair work.

The application of single-phase voltage to the three-phase may, unless the motor is adequately protected against it, cause serious damage or burnout of the windings. Ordinarily such motors, if large, or if automatically started, are protected by separate overcurrent devices, such as thermal relays, which open the circuit when damaging currents occur. In most cases, however, the thermal elements are placed in only two of the three phases, this being sufficient for many types of faults. In the case of "single-phasing," however, the application of single-phase voltage causes abnormal and unbalanced currents to flow in the motor windings and in the wires supplying it. These currents may be twice or more the rated current, and the highest value will be only in either one or two of the three phases, according to the type of motor, type of distribution transformer in the supply, and whether the open phase is on the primary side or the secondary side of the transformer. Figure 1 shows a typical example, with a wye-delta (ungrounded) transformer and a delta-connected motor, running at full load, with the open phase on the primary.

When single-phase voltage is thus applied, in some cases the motor, particularly if lightly loaded, will continue to run, but at reduced speed. Heavily loaded motors are, however, likely to stall, with the currents then being similarly unbalanced, but of a higher value. If de-energized and then called on to start again, they will probably remain at a stand-still, with these higher currents flowing.

Distribution System Connections

There are many variations found in the current values with different types of motors, and with different electrical connections, and with different locations of the fault. In general, however, the following conditions prevail:

1. With wye-delta or delta-wye transformers, having the neutral ungrounded or not connected in the circuit, and with the open phase on the primary, the highest current will be in only one phase of the supply wires.
2. With a single-phase load, or another three-phase

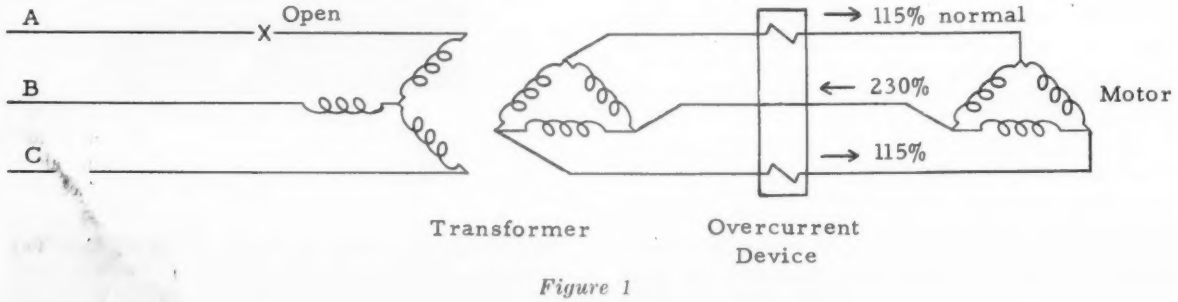


Figure 1

motor connected in parallel with the motor, and with the open phase on either the primary or the secondary, the highest current will generally be in only one phase of the supply wires.

3. With other connections, the highest currents will usually appear in two phases of the supply wires. This includes delta-delta or wye-wye transformers with the open on the primary, and cases with the open on the secondary except those indicated in item 2.

Three-Element Protection

It is obvious that, if the motor is protected by a two-element overcurrent device, and the highest current occurs only in the one phase which has no element, the high current in the motor windings which accompanies it will probably cause damage before the motor is disconnected. This is the situation shown in Figure 1, and also described in items 1 and 2. A third overcurrent element in the device would, however, provide protection. Under other conditions, indicated in 3, with high current in two phases, this would pass through at least one of a two-element device. Although some damage might occur, depending upon the relationship between the setting of the device and the thermal ability of the windings, a three-element device would offer no better protection. It may be concluded, however, that for three-phase motor installations, where the conditions of items 1 or 2 prevail, three-element overcurrent devices are needed for full protection.

National Electrical Code Rules

Although the facts just cited have been well recognized, the question of proper code rules for the protection of three-phase motors has been raised and discussed in the preparation of every National Electrical Code revision issued during the past 20 years. The imposition on all users of three-phase motors of the added expense for protective devices with three elements instead of two has not been believed to be justified by the over-all amount of burnout trouble. In the supplement to the 1947 Code, however, the Table in Section 4327 (now 430-37), which calls for two-element protection, was amended by a fine-print note as follows:

> "In the case of distribution systems supplying wye-delta or delta-wye connected transformers (having the wye neutral point in the primary ungrounded or not connected in the circuit), the authority enforcing this Code may require that three running overcurrent units be provided for the protection of three-phase three-wire motors, if field experience in the territory of the authority indicates that a third unit is desirable because of motor winding failures, unless the motors are otherwise adequately protected."

This amendment served to call attention to the possible need for three-element protection, but left it optional with the local authority to require it.

Recent Discussions

In 1957, Frank E. Johnson, Jr., Chief Operating Engineer, Electrical Distribution, New Orleans Public Service Inc., presented a paper before the Southeastern Electric Exchange calling attention to this problem. He made particular reference to three-phase motors used for air conditioning, large refrigerators, freezers, etc. These are largely unattended and automatically started, and the number of such installations had been increasing rapidly, particularly in the South and Southwest. He pointed out that the difference in cost between two-element and three-element protection was only of the order of $6 for 2- or 3-horsepower motors, up to $25 for 30 to 50 hp. He recommended that the code make the requirement for three-element protection mandatory for all three-phase motors. Mr. Johnson's recommendation was endorsed in a resolution by the Distribution Committee of the Southeastern Electric Exchange.

No change in code rules resulted from this action, and in 1958 the Transmission and Distribution Committee of EEI conducted a survey among its members to investigate the extent of single-phasing troubles which they had experienced. The results of this survey were not felt to be conclusive. Comments from companies, which felt that their problems were significant, indicated dissatisfaction with the existing optional rule in the code. Motor users cannot easily find out if the connections of the supplying transformers are such as to result in this sort of trouble. Manufacturers of unit motorized equipment are not likely to include three-element protectors unless they are specifically required. Utility company rules requiring the customers to furnish adequate protection, and disclaiming responsibility for damage occurring if this is not done, are sources of undesirable misunderstanding and disagreement.

An attempt in 1959 to modify the code on the strength of this information was unsuccessful. A Special Task Committee under Panel 11 was, however, established to undertake a corprehensive study of the problem. To assist this task committee, the Edison Elictric Institute and the National Electrical Manufacturers Association sponsored a research project consisting of a survey and laboratory tests by the Underwriter's Laboratories, Inc. In support of the project, Mr. Johnson presented another paper before the Transmission and Distribution Committee of EEI in May 1960, reviewing the problem and urging cooperation by the electric utilities.

Underwriter's Laboratories Project

This research project consisted of a survey of electric utility companies, electrical inspectors, industrial users of motors, non-industrial users of motors (stores, markets, hotels, schools, office buildings, etc.), original equipment manufacturers, motor manufacturers and electric motor repair shops, electrical contractors, and motor controller manufacturers. Approximately 14,000 questionnaires were sent to responsible individuals of each of these groups asking for their experience with three-phase motor burnouts and the causes for them. Some 3,000 replies were received. In addition, labora-

(Continued on page 61)

EEI Launches $100,000 Farm Better Elec

THE Edison Electric Institute is launching a $100,000 national advertising and promotion campaign designed to increase the efficient use of electricity on the farm.

The campaign, first national farm sales advertising effort by the nation's investor-owned electric utility companies, will kick off with a two-page magazine advertising spread in April. In addition to the spreads, there will be single-page ads. These will run throughout 1961 in five farm magazines—*Successful Farming, Farm and Ranch, Progressive Farmer, Electricity on the Farm,* and *Farm Journal* (Eastern and Western editions.)

Ads will center on the theme "8 cents worth of electricity will do 8 dollars worth of muscle work." Photographs will be taken on actual farms and copy will be based on interviews with farmers.

The Farm Group of EEI has approved the creative work and media schedule.

No Greater Potential

"No segment of American business offers a greater potential for the use of electricity than the farmer," said C. D. Lawrence of the New England Electric System, and Chairman of the EEI Sales Division Executive Committee. "He is the businessman in the blue denim suit."

Farmers create tremendous demands on American industry, spending in 1959 some $26 billion for materials and services for further production, Mr. Lawrence pointed out. The American farmer has invested almost $21,000 per worker, some $3,000 more than for the average industrial worker, he added.

Mr. Lawrence said that the main objective of the national advertising program will be to bring this cost story to farmers, county agents, vocational agriculture teachers, departments of informational services of all land grant colleges and universities, the Future Farmers of America, 4-H Club boys and girls, the farm press, manufacturers of electrical farm productive equipment, and other allies. Ad reprints will be widely distributed. A local action "grass roots" program, the "All-Electric Farm" program, will be used.

"The gross farm income is estimated at $180 billion in the next five years," Mr. Lawrence added. "The big

This is the first two-page ad scheduled by Edison Electric Institute for its Farm Better Electrically $100,000 national advertising and promotion program. It will appear in the June, 1961, issue of the *Progressive Farmer*.

Electrically Program for 1961

First Advertisements Will Appear in April Magazines

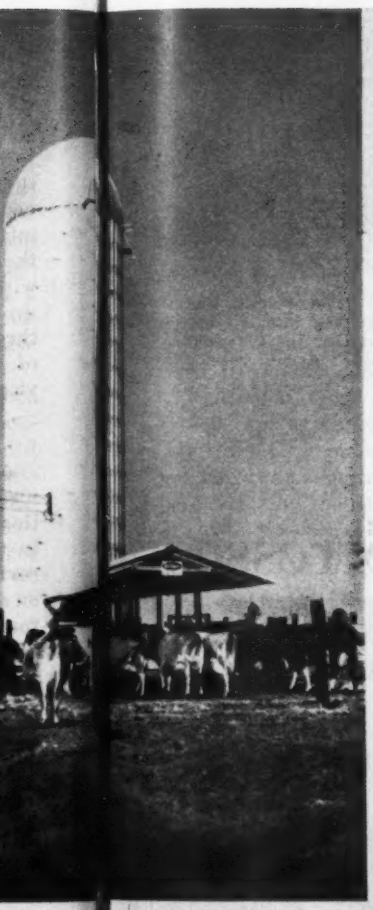
the

lion

big

question for the farmer is how to keep his costs down. We believe electricity and electrical automation is the answer to this problem."

Compton Advertising, Inc., New York City, is the agency handling the Farm Better Electrically national advertising program. This agency also is used by the Institute for its Live Better Electrically advertising program, whose 1961 budget is some $2.6 million.



EFFICIENT **EQUIP** frees up the farmer's time for other acti in extra profits. For example, the modern a own above is equipped with an electrical er and auger feeder. Dozens of other electri vices let fewer hands do more work in les all sizes and types.

OMICAL BARN HE eat right where rmer needs it, and eds it. He saves the f pre-heating befo liminates heating ne barn. Here el one man handle hole milking job.

On the farm 8¢ worth of electricity saves $8 worth of labor

Here's why electrically powered equipment can mean substantial profits for the modern farmer

Never before has electricity been such an important part of the business of profitable farming. For example, the use of electricity on the farm has increased 224% on a national average over the past 20 years. And during this same period, farm labor has become scarcer as the national hourly wage rate climbed 400%.

But while labor costs have risen, the average kilowatt-hour rate for electricity has decreased 25%. In fact, figures compiled by the Edison Electric Institute from a nation-wide farm survey show that today 8¢ worth of electric power does the equivalent work of $8 in manual labor.

So the farmer who does all the jobs he can with modern electric machinery is the businessman who's getting the most work out of his time and cash investment.

And farmers' wives know how much time and work electric appliances save them around the farm home. Comfortable, even electric house heating eliminates fuel dirt and the work needed to clean it off the walls, curtains and upholstery. Farm mothers find more time free to spend with their growing children, with the help of electric washers, clothes dryers, dishwashers and a host of other appliances.

An analysis of your farm operations will demonstrate where electricity can save you time, money and labor. To increase your profits through electric help, just phone the electric utility company in your neighborhood. A Farm Representative will visit you at your convenience, and at no obligation.

FARM BETTER ELECTRICALLY

YOU FARM BETTER ELECTRICALLY

Sponsored by Edison Electric Institute

The association of investor-owned electric utility companies

CONVENIENT WATER HEATER INSTALLATION is possible because an electric water heater requires no flue or vent. It can be placed in a closet, under stairs or even in the attic. And its quick recovery gives plenty of hot water for even a large family.

FLAMELESS ELECTRIC CLOTHES DRYING IS ODORLESS. Housewives find that fuel odors never cling to their laundry. And even delicate nylons, lingerie and wash-and-wear fabrics come out soft and fluffy.

FULL HOUSEPOWER WIRING provides plenty of circuits with convenience outlets and switches all through the house to run appliances at top efficiency. It's more fun to broil snacks, perk coffee right where the activity is. And blown fuses are no longer a problem.

General Session speakers at the Eighth Annual Electronics Seminar in Atlantic City, are, seated, from left, W. A. Pearce, New Jersey Natural Gas Co.; W. A. Gemmel, South Jersey Gas Co.; and R. W. Hogg, Atlantic City Electric Co. Standing, from left, are: E. D. Cowles, The Detroit Edison Co.; J. W. Lawrence, Duke Power Co.; W. T. Hamilton and S. E. Wertheim, The Cleveland Electric Illuminating Co.; and J. P. Bromley, Consumers Power Co. All attendance records were broken at this seminar.

Second-Generation Computers Stressed at Electronics Seminar

THE Eighth Annual Electronics Seminar, sponsored by the Institute's Accounting Division and American Gas Association's Accounting Section, in Atlantic City, Nov. 28-30, had as its theme "Experiences Communicated Lead to Better Performances for Profits."

All previous attendance records were broken, as 282 representatives of electric and gas utility companies and manufacturing companies registered for the meeting at the Claridge Hotel. The seminar was highlighted by discussions of plans and experiences with the so-called second-generation computers.

The seminar was planned and conducted by the EEI-AGA Electronic Accounting Machine Developments Committee, under the co-chairmanship of E. D. Cowles, The Detroit Edison Co., and J. P. Bromley, Consumers Power Co.

The two General Sessions were held in Trimble Hall —the first on the morning of Nov. 28, opening the seminar, and the other on the morning of Nov. 30, closing the meeting.

At the first session, R. W. Hogg, Treasurer and Assistant Secretary, Atlantic City Electric Co., and W. A. Gemmel, Vice President and Treasurer, South Jersey Gas Co., welcomed the registrants. W. T. Hamilton, Chairman of the EEI Accounting Division Executive Committee, and Manager of the Commercial Services Department, The Cleveland Electric Illuminating Co., delivered the opening remarks. He reviewed briefly the progress made in electronic data processing in the past decade. Mr. Hamilton stressed the importance of retaining a dynamic approach to the subject.

S. E. Wertheim, The Cleveland Electric Illuminating Co., J. W. Lawrence, Duke Power Co., and W. A. Pearce,

New Jersey Natural Gas Co., were the featured speakers at this session. They discussed "The Company Viewpoint of EDP Systems Design."

Mr. Wertheim described the two years of planning in his company for an IBM 7070 installation to bill 560,000 customers. The company also announced the placing of an order for a Farrington optical scanner to permit automatic re-entry of cash payments. Establishment of a cost and time schedule, including the schedule of release of personnel from the manual system, was a fundamental part of the planning.

200 Trained

In addition to the specific training of personnel in the data processing area, approximately 200 people were trained in the last four years in a general appreciation course on data processing. Engineers also received training in Fortran language. The staff in data processing was small, never more than nine programmers being active at any one time, and the backgrounds of the people were highly varied.

In connection with the design of the Revenue System which would be handled by the IBM 7070, the reorganization of the Customers Accounting Activity and the use of an ACME rotary file were decided upon to provide better service to customers in handling activity with respect to their accounts in the areas of service, collection, and accounting.

Conversion from the present key-driven and addressograph system will be accomplished through creation of cards from several documents. It was pointed out that the key punching was to be handled on a contract basis by the Statistical Tabulating Co. The conversion schedule, itself, included plans for increasing from rate of conversion of about 1000 accounts per day, at the beginning, to approximately 4000 accounts per day in the last four months of the 10-month conversion period.

A brief description was made of the customer records to be produced monthly to serve as the basis for handling all types of customers' inquiries, with the exception of current status of accounts, which is to be handled by an exception accounts receivable register. The one-sided postcard bill to be used was also illustrated, and it was pointed out that file maintenance will be run every day on the complete set of the company's accounts. Collection action will also be handled by the computer.

The company's conversion started on schedule early in November, and is expected to be completed by October, 1962. The IBM 720 Printer being used initially will be replaced ultimately by two IBM 1401 systems.

Mr. Lawrence described the developments of electronic data processing in Duke Power in the last four years, following the appointment of a Forms and Procedure Study Committee. The committee prepared a survey of what was being done and how it was being done in the entire organization. A survey guide was used, specifying 16 functions, each of which was broken into subdivisions, as a means of gathering data in order to arrive at a recommendation.

As a result of studies of available equipment, a recommendation was made to obtain an IBM 650 on a rental basis. As the planning proceeded, and expanded operations were anticipated, a second look was taken at the equipment on order. A 705 tape system was

Representatives of electric and gas utility companies are shown at the second General Session of the Electronics Seminar in Atlantic City. From left, are: J. F. Saunders, The Hartford Electric Light Co.; H. E. Mueller, Philadelphia Electric Co.; C. R. Gibbons, Pennsylvania Electric Co.; E. D. Cowles, The Detroit Edison Co.; J. P. Bromley, Consumers Power Co.; and R. H Johnson, The Brooklyn Union Gas Co. The seminar's theme was "Experiences Communicated Lead to Better Performances for Profits."

scheduled to replace the 650. Engineering personnel were trained, and began planning their applications for the computer.

It was determined that staffing for the total job should be done with Duke personnel. One hundred employees were screened and tested, and the staff was selected from this group.

IBM provided two experienced computer personnel and an EAM man to assist in the planning. The result was a division of responsibilities, and an estimate of months to complete each responsibility.

By June, 1958, the runs had been defined, and were assigned to programmers for block diagramming and coding. In October, 1958, the order was changed from an IBM 705 to the newly announced IBM 7070. Revised plans were made, and progress reviewed on a weekly basis to insure that the schedules would be met. Checkpoints were built into programs to assure effective restart procedures, and utility routines were used in the programming. Testing began in January, 1960, and increased in pace in the early part of the year.

In order to instruct field offices in the new procedures, a customer accounting procedure manual was prepared and circulated. It was used as the subject of training sessions.

Conversion began in September, 1960, with approximately 45,000 accounts being converted to the computer. The computer was delivered on Aug. 22, and operations began on Sept. 12, with parallel testing on about 5,000 accounts. During October, 45,000 accounts were billed on the computer, and another 45,000 were converted. Following this, a month delay was built into the schedule, and the follow-up on minor bugs was conducted.

The long planning and extensive training, plus the attention to schedules, resulted in a good start on the major undertaking of conversion to electronic data processing.

W. A. Pearce described the experience of his company of approximately 140,000 customers in converting to electronic data processing.

C. R. Gibbons, Pennsylvania Electric Co.; J. F. Saunders, The Hartford Electric Light Co.; and H. E. Mueller, Philadelphia Electric Co., participated in the closing General Session of the seminar by reviewing their plans for computer usage.

Selection of Computers

Each of the speakers indicated the process followed in the selection of their respective computers. All three of the companies are actively planning for their computer installations. Philadelphia Electric has ordered a Honeywell 800, Hartford Electric has ordered a General Electric 225, and Pennsylvania Electric has ordered two IBM 1401's. Various problems that were faced, and the methods of resolving each of the problems, were mentioned. The talks were aimed at companies embarking on electronic data processing.

The panel on System Concepts for Medium-Sized Second-Generation Computers presented several approaches to system design for the customer accounting application.

Moderator R. E. Ellifritz, Columbus & Southern Ohio Electric Co., discussed an approach using an IBM 1401 tape system. This approach illustrated various techniques, such as:

- Off-line versus on-line sorting of data.
- The use of punched cards as a control media.
- A method for punching remittance stubs for customers' bills.
- Preparation of a unit record billing register and various types of collection notices.

R. C. Wilkinson, West Penn Power Co., discussed the advantages inherent in consolidating data from many different reference files into a single magnetic tape record. Advantages cited were:

- Eliminating the duplication of a high percentage of the data that must be initially recorded and updated.
- Significant reduction in the data required on change notices.
- Ability to process records at electronic speeds.
- Reduction in space requirements for record storage.

He also pointed out that by pre-estimating meter readings, the meter reader can be provided with minimum and maximum dial settings, and confirming remarks can be entered on the reading media at that time, thus eliminating the need for special investigation.

R. VanWuyckhuyse, Rochester Gas & Electric Corp., described the major feature of the RCA 301 Electronic Data Processing system. The salient points developed in this presentation were:

- Programs for the RCA 301 are written in Cobol.
- The advantages of variable word length and message length.
- A description of the RCA 301 Disk Record File.
- The shifting of magnetic tape clusters and printers from one main frame to another, permitting greater flexibility in operations and the printing of bills and meter reading cards four-up.

'What's Your Problem?'

The panel session titled "What's Your Problem?" was an open forum. R. E. Harbaugh, Philadelphia Electric Co., was moderator, and panel members were J. P. Bromley, Consumers Power Co.; E. D. Cowles, The Detroit Edison Co.; J. A. Comerford, Consolidated Edison Co. of New York, Inc.; and P. W. Boyer, Commonwealth Edison Co. Some of the questions and discussions resulting from these questions were:

Q—How much time should be spent on a feasibility study?

A—It was agreed that time requirements vary greatly, depending on various conditions, such as the type of methods staff the company has, the existence or non-existence of complete manuals, the type of procedures being followed, and the requirements of management. One answer to the question was suggested as

"Enough time to get a complete picture and a good answer." It was suggested that earlier studies had to determine both functional feasibility and economic feasibility, but that functional feasibility is now known, and it is now necessary to determine only economic feasibility. Also, something like the "Sure" program makes it easier to obtain an approximation of the number of steps, time requirements, etc. It was stated that if a company is looking at different equipment, it is important to have a bench-mark problem with which to evaluate and compare the different manufacturers' equipment.

Q—Should final customers' master records be handled in the same manner as regular customers' master records?

A—It was generally agreed that final customers' master records and billing should be handled in the same manner as those for regular customers, although some additional data are needed. One panel member advocated issuing final bills monthly, while another favored issuing final bills every five days.

Q—Is it better to use a Cobol type of programming system or an Autocoder type of programming system?

A—It was generally agreed that, so far, there is not a common business language. It was stated that one company used Autocoder because this system was furnished by the manufacturer of its computer. Several manufacturers have put out Cobol type systems, but they are not compatible with one another. One panel member predicted that it will be four or five years before a common language of Cobol is developed; another panel member expects this to be accomplished in 1961.

Q—What controls are possible over exception print-outs and console typewriter messages?

A—Exception print-outs, such as high-low rejects, estimates, etc., may be controlled in the computer. Any item not disposed of before the next billing cycle is identified by the computer, and a special notice is prepared. In answer to a question, it was indicated that none of the companies represented was using prenumbered sheets to control typewriter print-out. It was indicated that the first tendency is usually to provide for an excessive amount of typewriter print-out. Experience has shown most of this typewriter print-out to be unnecessary, and it is desirable to confine it to bare essentials.

Charges for Computer Usage

Q—How are charges made for computer usage?

A—Several systems for charging various departments and accounts for computer usage were described:

- Entire cost of computer redistributed on basis of time used.
- Computer charged for at actual hourly rate; unused time charged to administrative and general expense (charged against the EDP group).
- Computer time charged through a clearing account, based on time used (generally on a total-system basis, not on a component basis).
- Costs distributed on a predetermined percentage split among accounts (reviewed two times a year).
- Costs spread on the basis of major application.

Q—How are tapes protected?

A—One company installed a device to set off an alarm if there is any smoke or fire. All tapes of this company are kept in a vault except when in use; an automatic fire door on the vault closes if the temperature reaches 120°. In a number of companies, the "grandfather" tapes are stored in a separate building, or in a separate part of the building. In one company, tapes are locked in mobile units (30 or 40 tapes in a unit), and the mobile units are moved into a fireproof vault when not in use. On the other hand, another company stores all types in the computer room and depends on a warning alarm system for protection.

Conversion Costs

Q—How are conversion costs charged?

A—Several methods of charging conversion costs were described. Many companies have charged all conversion costs to administrative and general expense. Other companies have charged the accounts of the operation affected (e.g., customer accounting). One company froze the customer accounting cost per meter and charged the excess costs during conversion to administrative and general expense.

Q—What cost basis should be used in determining the economics of performing a particular job on a computer?

A—When a computer is used for more than one shift, the cost of performing a particular job might be estimated on the basis of the prime shift rental, the second-shift rental, an average rate, or the estimated out-of-pocket cost of performing that job. Various opinions were expressed on this subject, and various methods have been followed by different companies. One panel member described a case where it did not pay to do the job on the basis of the prime rate, but the company saved money on the basis of out-of-pocket cost.

The panel on Control Techniques consisted of the following: W. Symons, Atlantic City Electric Co.; M. J. O'Connor, Consolidated Edison Co. of New York, Inc.; A. L. Conrad, The Detroit Edison Co.; W. C. Marble, Philadelphia Electric Co.; and the moderator, Mark Salvino, Peoples Gas Light and Coke Co. The difficulty of attempting to maintain all controls within the computer system was pointed out. In order to overcome these problems, one company reverted to a manual control system similar to the one in effect before the use of the computer. In another system presently in operation, computer control totals are prepared only for comparison to manually developed controls.

The moderator of the panel on Random Access, J. A. Comerford, Consolidated Edison Co. of New York, Inc., discussed the need in the utility industry for faster and more economical access to records. He presented a film showing the "Sabre" system (planned by American Airlines) as a model of a future information station in the utility industry.

E. T. White, Public Service Electric and Gas Co., summarized that portion pertaining to random access which was a part of the research project conducted by Harvard University for the electric and gas utilities.

E. T. Larkin, Commonwealth Edison Co., described how his company is using the IBM 305 Ramac. Commonwealth Edison has 3900 accounts, representing 12,000 meters, which are now stored in the 305 Ramac. Included in this group are all of the largest accounts, plus those billed under extremely complex rates. All updating of accounts receivable and master file, as well as bill preparation, calculation, and printing, are accomplished on the Ramac. These operations were previously handled by a separate group of the Revenue Accounting Department.

Character Recognition Panel

Members of the panel on Character Recognition included: H. Jacobson, Commonwealth Edison Co.; H. S. Thurston, Consumers Power Co.; R. M. Borzelleca, Atlantic City Electric Co.; and moderator P. W. Boyer, Commonwealth Edison Co. Mr. Boyer reviewed the need for character recognition to overcome the complex methods currently used to re-enter mechanically prepared documents. Mr. Jacobson covered Commonwealth Edison's approach to character recognition equipment. He indicated that an order had been placed for a Farrington scanner to be delivered in April, 1961. This equipment will be designed to read two lines of alphanumeric characters on a 2½" width stub. The effective rate of reading will be 300 stubs a minute with output directly to magnetic tape.

Mr. Thurston discussed the approach to character sensing followed by the staff at Consumers Power Co. Recognizing the volume of turn-around documents, some 70,000 meter-reading cards and 56,000 bill stubs daily, the use of character sensing at Consumers Power appeared to be particularly advantageous. Further investigation of the Farrington Scanner led to an order for such equipment to be delivered in January of 1962. The laminated bill stub will be 2.3" wide and contain some 31 numeric characters to be scanned on two lines. Output from the scanner will be through an IBM 523 summary punch to prepare three stubs to one card.

R. M. Borzelleca spoke of the actual results of Atlantic City Electric's scanner. He indicated that a reject rate of less than 2 percent is now being experienced. ACE has been using its optical scanner since April, 1960. The scanner reads a single line on the laminated bill stub of up to 19 numeric characters. An effective reading rate of 130 stubs per minute is obtained with the output directly to paper tape.

J. W. Allen, Natural Gas Co. Pipeline of America; G. H. Davis, West Penn Power Co.; C. R. Gibbons, Pennsylvania Electric Co.; J. O. Wilcoxon, Columbia Gas System, and the moderator, D. W. Keller of Columbia Gas System, presented the panel on Data Transmission. One company used this mode for some time to eliminate a delay in receipt of its data at the central computer, but returned to its original method, since transportation services improved. Two companies did not have a system installed, but were engaged in exploring the possibilities. The fourth company has a system installed and presently in use. The system covers about 1,100 miles and is used about two hours each day on a shared basis.

The panel on What's New in Peripheral Equipment, moderated by R. VanWuyckhuyse of Rochester Gas and Electric Corp., reviewed some of the new techniques and use of off-line equipment. Each member of the panel covered a specific area.

E. T. White, Public Service Electric and Gas Co., reported on the various automatic meter reading devices that the AGA-EEI Automatic Meter Reading Subcommittee has under consideration. Mr. VanWuyckhuyse reported on various techniques to prepare data for input into data processing systems.

New types of input equipment were discussed. Included were a general description of two new electronic data processing systems, the Bendix G20 Electronic Data Processing system and the Magnacard Data Processing system.

S. A. Warwick, Public Service Electric and Gas Co., in discussing off-line output devices, stressed proper utilization of equipment and various means of increasing output, such as revising forms to permit printing of two forms simultaneously, thereby using the maximum number of printing positions. He also emphasized the importance of scheduling flow of work, and the combining of operations to reduce the number of repetitive passes.

T. W. Koenig, Jersey Central Power and Light Co., reported on the various types of continuous forms, form separators, and form bursters now on the market.

Satellite Systems Concept

G. A. Ford, The Connecticut Light & Power Co.; R. E. Hanington, Philadelphia Electric Co.; and the moderator, F. F. Beisel, Pennsylvania Power and Light Co., presented a panel on Satellite System Concepts.

Mr. Ford and Mr. Beisel are preparing for installation of the 7070-1401 system. They plan to use the 1401 tape data processing systems for all input-output operations on an off-line basis, and certain small processing jobs that can be performed with the memory size of the 1401's on order. The more expensive and powerful 7070 system will be used for the main runs, which require the speed and additional memory size incorporated in the main frame. In summary, their approach is to use the relatively inexpensive small computer system wherever possible, and retain the 7070 computer for the more important and complex operations.

Mr. Hanington stated that Philadelphia Electric Co.'s approach to data processing does not include a Honeywell 400, and any computer jobs requiring use of memory will be processed on the main frame of the Honeywell 800.

A panel on design of Input-Output Data Codes was presented by J. A. Clinton, Niagara Mohawk Power Corp.; E. J. Knight, Baltimore Gas and Electric Co.; and moderator, C. Marchyshyn, West Penn Power Co.

Father Awarded EEI Medal for Saving Life of Son

12 Other Medals Are Presented, Bringing 28-Year Total to 518

A FATHER'S resuscitation of his son, who had been given up for dead after suffering an electrical shock last August, dramatically illustrates the importance of teaching artificial respiration procedures to electric company employees.

The father, A. B. Holley, mechanical foreman for Ohio Edison Co., was awarded the Edison Electric Institute Medal for saving the life of his son, C. E. Holley, also an Ohio Edison foreman, who had contacted a crane which was touching a high-voltage line.

The EEI Medal awarded the senior Mr. Holley was one of 13 such medals presented to EEI member company employees in the past year for using approved manual resuscitation techniques to save the lives of fellow workers suffering from electric shock.

In awarding the Medal to Mr. Holley, the EEI Committee of Judges noted:

"This is indeed an interesting case. If there is any proof of the importance and worth of teaching artificial respiration procedures, it is certainly evident here. When one sees that the training provides the opportunity for a father to save the life of his son, it provides a source of gratification to be in any way connected with the promotion of such worthwhile training."

The 13 EEI Medals recently presented bring to 518 the total awards reported since the Medal was established in 1933.

Brief descriptions of the 13 latest resuscitations to be recognized with the awarding of the EEI Medal are listed here.

A. B. HOLLEY
Ohio Edison Co.

On the afternoon of Aug. 3, 1960, C. E. Holley, mechanical working foreman for Ohio Edison Co., was felled by an electric shock when he touched a crane whose bucket contacted a 7200-volt energized wire.

Howard Proper, a mechanic, was the first to reach the injured man. He pulled Mr. Holley to the edge of the road and administered treatment for shock.

By mere chance, A. B. Holley, father of the injured man, and also an Ohio Edison foreman, arrived at the scene. He was told that his son was dead. However, he rushed to his son and immediately began giving him mouth-to-mouth respiration.

There was no change in the young man's condition for several minutes. Then, slowly the rate of pulse

C. E. Holley, center, whose life was saved by his father, A. B. Holley, left, examines the EEI Medal presented to the elder Mr. Holley. Both are foremen for Ohio Edison Co. Samuel Stites, Vice President of Ohio Edison, presents the accompanying certificate.

E. S. Fields, fifth from right, President of The Cincinnati Gas & Electric Co., presents EEI Medal to L. C. Steffen, who saved the life of R. J. Wallace, at left of Mr. Fields. Also honored were J. A. and P. H. Reinersman, holding certificates at left, and L. J. Maschinot, extreme right. W. H. Zimmer, Executive Vice President of Cincinnati Gas & Electric, is at right of Mr. Fields.

C. G. Woods, seated, second from left, Alabama Power Co., received the EEI Medal for saving the life of L. D. Butts, seated, left. Also cited were G. A. Gorman, seated, second from right, and C. E. Crow, seated right, as were (back row, holding certificates, from left) J. W. Morris, A. G. King, H. L. Smith, C. C. Bunton, and S. E. Freeman. At extreme left, back row, is J. L. Shores, Safety Manager.

F. E. Smith, third from right, Southwestern Electric Power Co., receives EEI Medal from E. F. Graham, Executive Vice President of the company. From left are: W. J. Sedberry, SEP Vice President; R. O. Smith, who was cited; Mr. Graham; F. E. Smith; J. D. James, who was cited; and C. E. Cook, Director of Personnel, Safety and Insurance for Southwestern Electric Power, Shreveport, La.

increased, and shortly after, the son began breathing normally, and regained consciousness. He was taken to a Dayton hospital, where he received treatment for burns on the right hand and both feet.

The *Akron Beacon Journal*, in an editorial titled "He Wouldn't Give Up," commended the senior Mr. Holley for the persistence that saved his son's life.

Mr. Holley received the EEI Medal and a Certificate of Assistance was awarded to Mr. Proper.

L. C. STEFFEN

Union Light, Heat and Power Co., an associated company of The Cincinnati Gas & Electric Co.

R. J. Wallace, The Cincinnati Gas & Electric Co. lineman, on the afternoon of Oct. 14, 1958, received an electric shock when a wire he was helping to string contacted a high-voltage, energized line.

Mr. Steffen was working with a crew which included the following men: J. A. Reinersman, lineman; P. H. Reinersman, groundman; and L. J. Maschinot, lineman, all employees of Union Light, Heat and Power Co., an associate company of The Cincinnati Gas & Electric Co.

The crew pulled Mr. Wallace away from the line. Mr. Steffen administered back pressure-arm lift resuscitation until he was revived. The above mentioned members of the crew assisted in the resuscitation.

Mr. Steffen was awarded the EEI Medal, and the Certificate of Assistance was presented to the Messrs. J. A. Reinersman, Maschinot, and P. H. Reinersman.

C. G. WOODS

Alabama Power Co.

On May 13, 1959, L. D. Butts, Alabama Power Co. lineman, made contact with an energized wire while working on a power pole in Birmingham. Unconscious, he fell backwards in his safety belt, almost in an inverted position.

C. G. Woods, a lineman in Mr. Butt's crew, called to other crew members, and climbed the pole. G. A. Gorman, sub-foreman, helped place Mr. Butts in a better position for administering of artificial respiration. Mr. Woods continued pole-top resuscitation for about two minutes before the injured man showed any signs of revival. Assisting in getting Mr. Butts to the ground were S. E. Freeman, truck driver; C. C. Bunton, groundman; A. G. King, lineman; J. W. Morris, lineman; and H. L. Smith, lineman. The operation was directed by C. E. Crow, foreman.

After Mr. Butts was on the ground, Mr. Woods continued to apply back pressure-arm lift resuscitation for about five minutes, until the injured man began breathing more regularly. As Mr. Butts was being lowered, Mr. King continued to apply artificial respiration.

Mr. Butts was hospitalized for seven days for electrical burns of the scalp and right knee.

The EEI Medal was presented to Mr. Woods, Medal Miniatures to the Messrs. King and Morris, and Certificates of Assistance to the Messrs Gorman, Crow, Freeman, Bunton and Smith.

For saving the life of a fellow worker, E. F. Oczkowski, second from right, The Connecticut Light & Power Co., receives EEI Medal from G. H. Davis, left, Division Superintendent, as P. V. Hayden, second from left, Vice President, and D. W. Price, right, Division Manager, look on. Mr. Oczkowski saved E. C. Brooks, Jr., a lineman.

J. H. Warden, left, President of Upper Peninsula Power Co., presents EEI Medal to W. F. Seiler, second from left, for saving the life of a fellow worker. Looking on are Thomas Monville, second from right, whose life Mr. Seiler saved, and J. D. Leavitt, company Safety Director. Mr. Monville backed into a high-voltage line.

Kansas Gas and Electric Co. President, G. W. Evans, left, presents EEI Medal to C. C. Rosenbaum, center, for saving the life of a fellow employee who had been felled by electric shock. At right is R. H. McAdams, Safety Director for Kansas Gas and Electric.

For saving the life of T. S. Morris, left, C. E. Crutcher, second from left, Community Public Service Co., received the EEI Medal. R. E. Fitzhugh, second from right, received the Medal Miniature and Certificate of Assistance for his part in resuscitating Mr. Morris, who had received an electric shock. B. L. Smith, right, company Vice President, makes the presentation to the employees.

F. E. SMITH

Southwestern Electric Power Co.

C. B. Endsley, Southwestern Electric Power Co. lineman, on the morning of June 22, 1959, was working on a pole in Center, Texas, when he touched an improperly covered energized conductor with one hand and an exposed ground wire with the other. He was descending the pole when the accident occurred. He turned blue in color and began to groan. When he fell to the ground, lineman's helper F. E. Smith turned Mr. Endsley over and began to administer artificial respiration. J. D. James, also a lineman's helper, cleaned out Mr. Endsley's mouth, and pulled his tongue out to prevent strangulation. R. O. Smith, line foreman, relieved F. E. Smith, and continued the artificial respiration. Shortly afterwards, Mr. Endsley regained consciousness. He was taken to the hospital, where he was treated for bruised shoulder blades and back, and electrical shock.

Mr. Smith (F.E.) was awarded the EEI Medal, Mr. Smith (R.O.) received a Medal Miniature, and Mr. James was awarded the Certificate of Assistance.

E. F. OCZKOWSKI

The Connecticut Light & Power Co.

E. C. Brooks, Jr., lineman for The Connecticut Light & Power Co., on the morning of July 7, 1959, received an electric shock when the aerial ladder on which he was to work contacted an energized line. When it appeared to E. F. Oczkowski, lineman, that the ladder was in contact with the primary, he jumped into the truck, and raised the ladder slightly. Then he put on rubber gloves and protectors, and started up the ladder. However, Mr. Brooks fell from the ladder, landing on the back of the truck. His teeth were clamped on his tongue, and his face was purple. Mr. Oczkowski began applying mouth-to-mouth resuscitation. It was not until about 17 minutes later that the injured man began to breathe normally.

Mr. Brooks was hospitalized for more than 80 days.

Mr. Oczkowski was awarded the EEI Medal for saving the life of a fellow worker.

W. F. SEILER

Upper Peninsula Power Co.

Thomas Monville, a lineman for the AEG Electric Co., was working on a pole in Atlantic, Mich., on the morning of July 12, 1959, when he backed into a high-voltage line. He fell about 35 feet to the ground, unconscious.

W. F. Seiler, lineman for Upper Peninsula Power Co., who was working on a pole nearby, found Mr. Monville unconscious. He administered artificial respiration for about two minutes, when the injured man began to breathe. This was continued for another two minutes.

T. I. Harmon, second from left, Indiana & Michigan Electric Co., holds the EEI Medal and Certificate which were awarded to him by R. J. Byler, left, District Manager, for saving the life of a fellow worker who had been felled by electric shock. Herschel Worrell, second from right, received the Certificate of Assistance. At right is William Ireland, the company's Safety Supervisor.

Mr. Monville was hospitalized, where he was treated for third degree burns.

Mr. Seiler was awarded the EEI Medal.

C. C. ROSENBAUM

Kansas Gas and Electric Co.

On the afternoon of July 20, 1959, J. S. Knowles, apprentice lineman for Kansas Gas and Electric Co., while working near the top of a utility pole, contacted an energized line with his right forearm. Knocked unconscious, he slumped back in his safety belt.

Serviceman C. C. Rosenbaum climbed the pole, and with the help of a neighbor who was passing by, lowered the injured man to the ground. Mr. Knowles was not breathing. Mr. Rosenbaum applied artificial respiration for 20 minutes before Mr. Knowles showed any signs of recovering. Mr. Knowles was treated in the hospital for severe electric shock.

The EEI Medal was awarded to Mr. Rosenbaum.

C. E. CRUTCHER

Community Public Service Co.

T. S. Morris, Community Public Service Co. lineman, on the morning of Aug. 5, 1959, while working on a pole in Silver City, N. M., contacted a high-voltage conductor with the back of his head. He slumped back in his safety belt, free of contact. C. E. Crutcher, lineman who was ascending the pole beneath Mr. Morris, hurriedly climbed the pole and began administering pole-top resuscitation. Reeves Fitzhugh, foreman, radioed the division office for an ambulance and doctor, then climbed the pole to assist Mr. Crutcher.

Within 20 minutes of the accident, Mr. Morris was breathing again and hospitalized, where he was treated for electrical burns on the back of the head and inside of his left knee.

Mr. Crutcher was awarded the EEI Medal, and Mr. Fitzhugh received the Medal Miniature.

T. I. HARMON

Indiana & Michigan Electric Co.

On the morning of Dec. 17, 1959, lineman C. C. Roark of Indiana & Michigan Electric Co., was working on a pole in Marion, Ind., when a tool bucket he was holding contacted an energized conductor. T. I. Harmon, lineman, was working with Mr. Roark, on the opposite side of the pole.

Mr. Harmon heard Mr. Roark yell, and immediately freed him from the conductor. He slumped in his belt, unconscious, and was not breathing. Mr. Harmon applied pole-top resuscitation, and after about three minutes the injured man began to moan, and tried to breathe. Artificial respiration was continued.

D. H. Nelson, Black Hills Power and Light Co., is awarded the EEI Medal for saving the life of a company lineman who had contacted an energized, high-voltage wire. Congratulations are extended by Robert Asheim, BHP&L Vice President-Operations.

R. B. Johnson, right, President of the Hawaiian Electric Co., Ltd., presents the EEI Medal to John Veriato, Jr., center, who saved the life of a construction worker who had contacted an energized electric line. At left is R. L. Cooper, company Safety Engineer.

H. E. Puchta, second from left, and P. G. Zoellner, right, Union Electric Co., received EEI Medals for saving the lives of two men who received electric shocks in a double accident. Artificial respiration was given to J. A. Miller, third from left, and R. W. Steusse, second from right. H. R. Scott, Union Electric Vice President, left, makes the presentation at a ceremony at the St. Louis office.

Herschel Worrell, lineman, came up the pole, removed Mr. Roark's climbers and belt, and placed a hand line under his arms, preparatory to lowering him to the ground. Mr. Harmon continued applying resuscitation until Mr. Roark was coherent. He was then lowered to the ground and taken to a hospital, where he was treated for electrical shock and burns.

Mr. Harmon was awarded the EEI Medal, and Mr. Worrell received the Certificate of Assistance.

D. H. NELSON

Black Hills Power and Light Co.

While working on a power pole on April 18, 1960, Joseph Kunsman, lineman for Black Hills Power and Light Co., made contact with an energized, high-voltage wire. He fell clear of the line, and was unconscious in his safety belt. He was not breathing. On the same pole with Mr. Kunsman was D. H. Nelson, working foreman for the company. Going to the aid of Mr. Kunsman, Mr. Nelson applied pole-top resuscitation, restoring the injured man's breathing in about two minutes. He continued the resuscitation for another three minutes. Mr. Kunsman was hospitalized for three days with third degree burns on his right arm and left leg.

In making the EEI Medal presentation to Mr. Nelson, N. G. Simpson, BHP&L President, paid tribute to Mr. Nelson's use of training received in safety meetings.

JOHN VERIATO, JR.

The Hawaiian Electric Co., Ltd.

While working atop a new addition to an apartment house in Honolulu on May 13, 1960, Peter Berknes, construction engineer for B. M. Heede, Hawaii, Ltd., suffered electric shock when an iron guide pole he was holding contacted a primary conductor outside the building. His breathing stopped, and he suffered third degree burns. Two fellow workmen rushed to obtain help. A Hawaiian Electric Co. overhead crew was working one block away from the scene of the accident.

Crew foreman John Veriato, Jr., and other workers had seen Mr. Berknes fall, and rushed to give him aid. He found the injured man lying on his right side in a cramped position, face pale, features rigid. He was not breathing. Mr. Veriato used the mouth-to-mouth method of resuscitation because of severe arm and hand burns on Mr. Berknes. After a few cycles, the injured man began to breathe.

R. B. Johnson, President of Hawaiian Electric, presented the EEI Medal to Mr. Veriato.

P. G. ZOELLNER
H. E. PUCHTA

Union Electric Co.

On the afternoon of June 9, 1960, J. A. Miller, R. W. Steusse, and P. G. Zoellner, linemen for Union Electric Co., were working on poles in St. Clair, Mo., with a line-stringing operation, when one of the wires accidentally touched a high-voltage line and became energized. The

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Protection of Three-Phase Motors Against Single-Phasing

(Continued from page 47)

tory tests were made on five different types of three-phase motors under various conditions of electrical supply, single-phasing, and voltage unbalance. The results of the project were presented by the Underwriter's Laboratories in a "Fact-Finding Report on Two versus Three Running Overcurrent Units for the Protection of Three-Phase Motors," Nov. 14, 1960.

Results of Project

This report indicated that most of the electric utility companies are serving a substantial number of three-phase loads, and that about 50 percent of such service involves the use of wye-delta or delta-wye, ungrounded, distribution transformers. It is under these conditions that "single-phasing" from the opening of one phase of the primary of the supply to three-phase motors causes excessive current in one phase only of the motor service, as previously explained in this paper. The survey indicated that a substantial number of three-phase motor burnouts due to "single-phasing" are being experienced. These are especially troublesome in isolated, or unattended, applications such as air conditioning, refrigeration, and pumping installations. In attended locations, an abnormal operating condition, such as "single-phasing," is likely to be detected and the motor disconnected from the line before damage occurs. In the case of unattended equipment, on the other hand, under the same abnormal conditions the motor would probably continue to operate with unbalanced currents, or would stall and would remain at a stand-still on an attempted start, without being noticed. The laboratory test corroborated the expected effect of transformer connections, and of the location of the open phase, on various types of motors, as described earlier in this paper. In addition they also showed that the highest current appeared in one phase only of the service under certain conditions of voltage unbalance as well as under "single-phasing."

Task Committee's Recommendations

As a result of the information in this report, the Special Task Committee of Code-Making Panel 11 has concluded that:

- There is a definite increase in the use of wye-delta and delta-wye, ungrounded transformers.
- No discrimination should be made in the rules between different types of distribution systems, because of the difficulties in enforcement.
- Three overcurrent units should be required for certain specific isolated, or unattended applications, such as air conditioning, refrigeration, and pumping installations.
- Other than this, motor users are having little difficulty on installations where two running overcurrent units are used, and a mandatory rule requiring three overcurrent units cannot be justified.

The Task Committee is, therefore, recommending that the National Electrical Code be changed by replacing the fine-print note under Table 430-37 with the following:

"Three running overcurrent units shall be used where motors are installed in isolated or unattended locations unless the motors are otherwise adequately protected.

"Typical examples of such locations are air conditioning, refrigeration, irrigation pumping, and oil well pumping."

America's Electric Light and Power Companies Will Provide the

POWER FOR YOUR FUTURE

- A new, 8-page booklet describing the plans of investor-owned electric companies for meeting the nation's power needs.
- Designed for distribution to stockholders, employees, customers, and others.
- The booklet may be ordered from EDISON ELECTRIC INSTITUTE, 750 Third Avenue, New York 17, N. Y.
- Prices, without company imprint, range from 4 cents per copy in quantities of 1,000-4,999 to 1.8 cents per copy in quantities of 50,000 or more.

Floodlighting Institute Is Formed by NEMA, with EEI Cooperation

This church in Norwalk, Va., illustrates good use of floodlighting. The Floodlighting Institute will promote floodlighting for civic, public, historical, religious, and educational structures.

Organization to Develop Promotional Materials, Publicize Floodlighting

EDISON ELECTRIC INSTITUTE is lending its cooperation to the National Electrical Manufacturers Association in the promotion of the newly established Flood Lighting Institute, organized by NEMA's Floodlighting Section to develop the floodlighting market.

At a recent meeting in Cleveland, EEI and NEMA staff members, as well as representatives of EEI member companies and electric equipment manufacturers, discussed ways to make the program best serve the interests of electric utilities in their local floodlighting promotional efforts.

Applications of Program

E. B. Karns, Westinghouse Electric Corp., and Chairman of the NEMA Floodlighting Section, explained that at a meeting last fall, there had been approval of a promotional program aimed at developing the floodlighting market. This program, at least for the first year, Mr. Karns explained, will be concentrated on the following floodlighting applications:

- Public and civic buildings.
- Historical buildings and structures.
- Horticultural gardens.
- Churches and schools.

Two Categories

Mr. Karns pointed out that the program would be carried on in two principal categories: (1) development of promotional materials; and (2) gaining maximum publicity for floodlighting in magazines and newspapers, both nationally and in the areas of the cooperating utilities.

It was emphasized that in order to give the program greater flexibility and to avoid non-acceptance of its material and publicity as being commercially inspired, the activity would operate in the name of the Floodlighting Institute. As an activity of NEMA's Floodlighting Section, the program will, however, be subject to the established NEMA policy covering promotional programs.

National promotion of the program will be undertaken by NEMA, through its agency, Griswold-Eshleman, beginning this month. The program has requested that electric utility companies submit to the Flood-

Barton Academy in Mobile, the first public school in the State of Alabama, uses floodlights to focus attention on the building, which has historical and educational importance in the state. This example of floodlighting to enhance a structure was pointed out by the newly formed Floodlighting Institute in Cleveland. The Institute was organized by NEMA, with cooperation of EEI.

lighting Institute, 55 Public Square, Cleveland, Ohio, suitable identified photographs for use in national advertising and publicity programs. The photographs should show public buildings, historical sites or structures, horticultural gardens, or churches and schools utilizing floodlights.

NEMA will prepare an information portfolio to be sent to sales vice presidents and commercial sales managers of EEI member companies. The portfolios will contain: an outline of the Floodlighting Institute's plans and its functions; copies of newspaper and magazine articles; articles and schedules of future releases; copies of mailing pieces; copies of the specialized brochure used in answer to inquiries; and a list of available publications published by NEMA member companies.

Those attending the Cleveland conference were: J. D. Waldner, EEI; W. P. Graham, Philadelphia Electric Co.; C. W. McCormick, the Connecticut Light & Power Co.; Lester Roe, Atlantic City Electric Co.; E. B. Karns, Westinghouse Electric Corp.; T. J. Ryan, NEMA; and E. C. Powers, Griswold-Eshleman Co.

'Pocketbook of Electric Industry Statistics' Available

THE 1960 edition of the "EEI Pocketbook of Electric Industry Statistics" is available from the Institute, 750 Third Ave., New York 17, N. Y.

This is the eighth edition of the pocketbook. It includes two new tabulations, which have been added to broaden the usefulness of the booklet. These tables show the condensed combined income statements for investor-owned electric utilities, and the condensed combined balance sheet for investor-owned electric utilities. The other 32 tables, which appeared in previous editions, have been brought up to date to present the latest available information. Many have been expanded.

Information carried in the booklet is nationwide in scope and comes from authoritative sources, including EEI publications, reports and studies, Federal Power Commission reports, Congressional hearings, and other government documents.

The price schedule is as follows:

Single copies	40¢ each
2 - 49 copies	29¢ each
50 - 99 copies	25¢ each
100 or more	21¢ each

59 Safety Achievement Awards Presented

(Cont. from page 42)

Kentucky Utilities Co.—Old Dominion Power Co. Entire Company 1,804,117
Monongahela Power Co.
Transmission & Distribution Department, Fairmont Division 1,033,029
Clarksburg Division, Transmission and Distribution Department 1,051,028
Clarksburg Division 2,137,086
Morgantown Division, Commercial and Sales Department 1,289,944
Clarksburg Division, Commercial and Sales Department 1,129,430
New Orleans Public Service Inc.
Electric System 3,089,097
Distribution Division, Electric Department 1,028,586
Northern Virginia Power Co.
Entire Company 1,234,803
Oklahoma Gas and Electric Co.
Mustang Station 1,000,000
General Stores Department 1,000,000
Pacific Gas and Electric Co.
San Jose Division, Peninsula District Electric Department 1,000,000
Pacific Power & Light Co.
Albany District 1,000,000
Pennsylvania Electric Co.
Somerset District 1,529,458
Entire Company 1,008,604
Philadelphia Electric Co.
Entire Company 1,148,000
Portland General Electric Co.
Entire Company 1,070,434
The Potomac Edison Co.
Substations and Communications Department 1,036,584
Potomac Electric Power Co.
Entire Company 1,009,200
Generating Department 1,170,859
Entire Company 2,236,733
Public Service Co. of Colorado
Entire Company 1,699,488
Electric Operations 1,193,219
Public Service Electric and Gas Co.
Burlington Generating Station 1,001,984
Southern California Edison Co.
Southeast Substation Division 1,022,591
Southwestern Electric Power Co.
Entire Company 1,002,250
Tampa Electric Co.
Meter Department 1,114,321
Texas Power & Light Co.
Entire Company 1,796,765
Virginia Electric and Power Co.
Richmond Miscellaneous 1,078,888
Wisconsin Power and Light Co.
Beloit District 1,004,396

Father Saves Son's Life, Gets EEI Medal

(Continued from page 60)

three men received electric shocks. Mr. Miller, on a pole adjacent to the one where the Messrs. Steusse and Zoellner were working, sagged, unconscious in his safety belt. Mr. Steusse slumped in his belt and fell to an almost horizontal position with his right hand across the neutral. Mr. Zoellner received some shock, but did not lose consciousness. Mr. Zoellner called for help, and was told by foreman V. J. Eckelkamp to extinguish a fire which was burning Mr. Steusse's pants from the waist down. He then began to administer pole-top resuscitation. R. H. Stodieck, lineman, climbed the pole to assist Mr. Zoellner. Mouth-to-mouth resuscitation was started by Mr. Zoellner after it seemed that the pole-top method was not reviving Mr. Steusse. Shortly after that, the injured man began breathing. C. G. Snodgrass, lineman, helped lower Mr. Steusse to the ground.

Meanwhile, J. H. Cooper, lineman working on another pole, had come to the aid of Mr. Miller. With the help of R. E. Pisane, groundman, and R. F. Henderson, truck driver-operator, he lowered Mr. Miller to the ground. After he was placed in the ambulance and was en route to the hospital, Mr. Miller became unconscious and stopped breathing. H. E. Puchta applied mouth-to-mouth resuscitation until he was breathing normally. The attending physician attributed Mr. Miller's loss of consciousness to severe physical shock, following the accident.

A. Krimmel, truck driver, and W. E. Connor, relief foreman, assisted in the rescue.

Mr. Steusse was treated for shock, and first, second, and third degree burns. Mr. Miller was treated for shock and first degree burns.

EEI Medals were awarded to the Messrs. Zoellner and Puchta. A Medal Miniature was presented to Mr. Eckelkamp, and Certificates of Assistance were presented to the Messrs. Snodgrass, Stodieck, Krimmel, Connor, Cooper, Henderson, and Pisane.

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